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Docket No.: 0303-0491PUS1  
(PATENT)

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In re Patent Application of:  
Haruki KODAMA et al.

Application No.: Not Yet Assigned

Confirmation No.: N/A

Filed: November 10, 2004

Art Unit: N/A

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For: CAST-IRON INSERT AND METHOD OF  
MANUFACTURING SAME

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Examiner: Not Yet Assigned

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The PTO is requested to use the amended sheets/claims attached hereto (which correspond to Article 19 amendments or to claims attached to the International Preliminary Examination Report (Article 34)) during prosecution of the above-identified national phase PCT application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §1.16 or 1.14; particularly, extension of time fees.

Dated: November 10, 2004

Respectfully submitted,

By 

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Attachment(s)

Explanatory note based on the provision of Article 19(1) of PCT

Claim 1 is amended to clarify that the protrusions have respective flat faces on distal ends thereof, and that the undercuts have respective spherical contact portions. This is clearly shown in the description, page 6, lines 5-14, and page 9, lines 3-12. Also, claim 4 is amended to clarify similar features. Claim 4 is further amended to clarify the ratio of diatomaceous earth, bentonite, a parting agent, a surface active agent and water of the facing material. The ratio is clearly shown in the description, page 6, lines 22-26.

## CLAIMS

1. (Amended) A cast-iron insert (10) around which another metal is to be cast, comprising:

a surface (16) for contact with a molten mass of said other metal to be cast around the cast-iron insert (10); and

a plurality of protrusions (20) disposed on said surface (16) and having respective substantially conical undercuts (18) which are progressively spread outwardly from said surface (16),

wherein said protrusions (20) have respective flat faces (21) on distal ends thereof, said undercuts (18) have respective spherical contact portions, and said other metal is cast around said spherical contact portions, and

wherein said cast-iron insert (10) comprises a cylinder liner (10).

2. (Canceled)

3. (Canceled)

4. (Amended) A method of manufacturing a cast-iron insert, comprising the steps of:

coating an inner surface of a mold (30) with a facing material (36) containing a thermally insulating material, a binder, a parting agent, a surface active agent, and water;

replacing an existing atmosphere in said mold (30) with an inactive gas atmosphere; and

rotating said mold (30) which has been coated with said facing material (36) and simultaneously pouring molten cast iron (40) into said mold (30), to produce a cast-iron insert (10) having a surface (16) for contact with a molten mass of another metal to be cast around

the cast-iron insert (10), and a plurality of protrusions (20) disposed on said surface (16) and having respective substantially conical undercuts (18) which are progressively spread outwardly from said surface (16),

wherein said protrusions (20) have respective flat faces (21) on distal ends thereof, said undercuts (18) have respective spherical contact portions, and said other metal is cast around said spherical contact portions, and

wherein said facing material (36) contains 20 weight % to 35 weight % of diatomaceous earth as said thermally insulating material, 1 weight % to 7 weight % of bentonite as said binder, 1 weight % to 5 weight % of said parting agent, 5 ppm to 50 ppm of said surface active agent, and the remainder of water.

5. (Canceled)

6. (Canceled)

7. A method according to claim 4, wherein said mold (30) is rotated at a mold G No. ranging from 25G to 35G when the inner surface of the mold (30) is coated with the facing material (36).